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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/722,838	11/26/2003	Suan Jeung Boon	303.601US3	8165
21186	7590	05/16/2005		
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402-0938			EXAMINER MITCHELL, JAMES M	
			ART UNIT	PAPER NUMBER
			2813	

DATE MAILED: 05/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/722,838

Applicant(s)

BOON, SUAN JEUNG

Examiner

James M. Mitchell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 February 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-58 is/are pending in the application.
- 4a) Of the above claim(s) 10-26 and 46-58 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-9 and 27-36 is/are rejected.
- 7) ☒ Claim(s) 37 and 38 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

1. This office action is in response to the election filed February 10, 2005.

Election/Restrictions

2. Claims 10-26 and 46-58 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on February 10, 2005, contending that claim 1 is generic. However, because claim 1 includes material element ("dice/ die thereon") additional to those recited in the non elected species claims wherein the other species disclose that the die/dice is in/apart of the wafer, it does not confine the organization covered in each of the species. See M.P.E.P 806.04(d). As such, the previous indication of no generic claim is deemed proper.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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4. Claims 1-4, 6, 8, 9, 27-36, 39 are rejected under 35 U.S.C. 102(e) as being anticipated by Yang (U.S 6,498,387).

5. Yang (Fig. 11-14) discloses (cl. 1, 27, 32, 34) a method of packaging comprising: applying an adhesive (11) as a film to a first side of a finished wafer (1), the finished wafer having at least one die/ dice (5) thereon; and forming an array of conductive elements (17,21) within the adhesive, the array of conductive elements electrically coupled to an array of connection pads (13) on the at least one die;

(cl. 2) the openings aligned with the array of connection pads (fig 13); and substantially filling the openings with an electrically conductive material (17; Fig. 14);

(cl. 3, 9) wherein the method is performed in the order presented;

(also cl. 4, 28) processing the adhesive to create openings in adhesive (15);

(cl. 6, 33, 39) singulating ("sawing"; Col. 4, Lines 30-34) the at least one die from the wafer wherein the at least one die with the adhesive and electrically conductive material form an individual flip chip package;

(cl. 8) and curing the adhesive (Col. 3, Lines 53-56 & 60-61);

(cl.29) and forming the openings by laser (Col. 3, Lines 6-8);

(cl. 30, 31,also 34, 36) wherein conductive elements include solder balls array ("BGA...matrix"; Col. 4, Lines 19-21 & 24-27);

(cl. 35) forming solder columns (Fig. 14; 21).

Claim Rejections - 35 USC § 103

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6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 5, 40-43 and 45 rejected under 35 U.S.C. 103(a) as being unpatentable over Yang (U.S. 6,498,387) in combination with Elenius et al. (U.S. 6,441,487).

8. Yang discloses the elements stated in paragraph 5 of this office action, but fails to disclose applying a protective coating to a second side of a wafer.

9. Elenius utilizes a protective coating (16) to a second side of a wafer.

10. It would have been obvious to one of ordinary skill in the art to form a protective coating to a second side of the wafer of Yang in order to increase mechanical strength as taught by Elenius (Abstract).

11. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yang (U.S. 6,498,387) in combination with Moriya et al. (U.S. 6,013,944).

12. Yang discloses the elements stated in paragraph 5 of this office action, but fails to disclose its flip chip mounted to a receiving support (i.e. board).

13. Moriya teaches a flip chip mounted to a support/board (Fig. 1).

14. It would have been obvious to one of ordinary skill in the art to mount the chip of Yang to a board in order to form an electronic device as taught by Moriya (Col.1, Lines 17-21).

Allowable Subject Matter

Claims 37 and 38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art does not disclose or make obvious applying an adhesive with preformed holes that is applied to the first side of a wafer that has a die formed thereon, wherein the holes are filled with a conductive material, including all the limitations of the independent claim.

While forming holes in a preformed material that is formed over dies is known in the art in order to form contacts such as shown in Fillion (U.S. 6,306,680). In those cases, the adhesive material (126) is formed to a nonadhesive material (114), wherein the combined material while applied to the die (interpreted to mean in contact) fails to also be applied to the first side of the wafer (when the die/dice is formed thereon [wafer]).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 8:00-4:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702.

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The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jmm
April 28, 2005


CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
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